nest opposite the cliff face to necessitate their being crossed by a bird returning to its nest.

Traps can be lowered, by means of the anchoring cord, to otherwise inaccessible nests on cliff ledges. A piece of tape extending from the base of the trap to the lower edge of the free jaw keeps that jaw open as the trap is lowered onto a nest. A trapped bird is retrieved by pulling in the anchoring cord. Gloves should be worn to avoid bites and scratches while handling birds. Set traps should not be left unattended, because a struggling bird might seriously injure itself.

Using the method described, I trapped and banded 19 nesting Pelagic Cormorants. None of these was injured or deserted its nest. The same traps were used successfully to capture Pigeon Guillemots (*Cepphus columba*) and Western Gulls (*Larus occidentalis*) for banding.

I thank Robert I. Bowman for critically reading the manuscript.—Richard R. Tenaza, Department of Biology, San Francisco State College, San Francisco, California.

RECENT LITERATURE

BANDING

(See also 22, 24, 31)

1. Annual Report for 1961 of the Swedish Bird-Ringing Office. Sten Osterlöf. 1965. *Vår Fågelvärld,* **24:** 335-400. (Swedish summary.) The number of banders increased from 360 to 420 and the total banded birds from 80,411 to 134,766. Lists of 233 species of birds banded and of 1,526 recoveries of 130 species banded in Sweden as well as a map showing some of the most remarkable recoveries complete the report. A Curlew (*Numenius arquata*) emerges as the oldest bird, 18 years, and two Spotted Flycatchers (*Muscicapa striata*) reached seven and eight years.—Louise de K. Lawrence.

2. Recoveries of Swallows Ringed in Britain and Ireland. Peter Davis. *Bird Study,* **12**(3): 151-169. Excluding birds which moved less than five miles, 587 recoveries of British Barn Swallows are analysed. Between July and September, juveniles disperse in all directions for distances of up to 50 miles from their birth-places (rarely as much as 120 miles). Adults apparently do not move more than about ten miles from their nesting-places at this time. The autumn departure from the British Isles is to the S.S.E. into France; then most birds continue in the same direction across the Mediterranean Sea and Sahara Desert to Nigeria and the Congo. (Davis suggests that "many" birds change directions to S.S.W. while in France, but in fact the recoveries involved are very few in number, and are better interpreted as stragglers.) Of 59 mid-winter recoveries (December to February), all but five were in the eastern part of the Union of South Africa, 6,000 miles from the breeding-area. The few spring recoveries are in the same general areas as the autumn recoveries, but there is evidence that some birds fly farther to the east in Europe and enter the British Isles from the southeast. Adults are extremely faithful to their breeding-places in subsequent years, but young birds scatter more widely, and have been found breeding as far as 225 miles from their birth-places. Davis did not calculate mortality rates but from the data he quotes the average mortality rate appears to be about 73% per year; one exceptional bird was sixteen years old.—I. C. T. Nisbet.

3. Recoveries Report Number 5/6: Ringing Scheme of the Spanish Ornithological Society. (Capturas de aves anilladas en España: informe N.° 5/6 (1961-1962)). Bernis, F., M. Lalanda, and F. Leon. 1963. *Ardeola,* **9** (part 1): 21-51. This report, covering the years 1961 and 1962, lists both long-distance and short-distance recoveries of birds banded in Spain. Long-distance recoveries are given in detail—date and place of banding and recovery. Some interesting recoveries are—*Ciconia ciconia* recovered in Nigeria, Senegal, and Mali; *Carduelis carduelis* in Italy; *Sturnus vulgaris* in Italy, Austria, Czechoslovakia, and Poland. —David W. Johnston.

4. Mass Banding of the Common Starling -- Sturnus vulgaris. R. H. Green. 1965. *Australian Bird Bander*, **3**(2): 27-31. A nocturnal Starling roost was discovered in an old building, and from the roost several hundred birds were captured, banded, and released. The most notable recovery was of a bird that had flown 1,225 miles north in 29 days. Some homing experiments were attempted wherein groups of Starlings were transported to distant locations before being released. Subsequent recovery of these banded birds at the original roost was small (approximately 5 per cent). Other points covered in the paper include observations on breeding and feeding of nestlings.—David W. Johnston.

5. Bird Report: 1964. Lord Medway and I. C. T. Nisbet. 1965. *Malayan Nature Journal*, **19** (2 and 3): 160-194. The present report, the third in a series, compiles observations, banding, visible migration, arrivals and departures of migrants, and nest records, chiefly in western Malaysia. In 1964, 7,394 birds of 244 species were banded, and in this paper certain recoveries and recaptures are mentioned. A number of the recaptures were birds returning to the same locality from one winter to the next (Great Reed Warblers, Brown Shrike, and others). Migration of raptors, waders, shorebirds, and other species is discussed in some detail.—David W. Johnston.

6. A Technique for Capturing Abdim's Storks Sphenorhynchus abdimii (Lichtenstein). J. B. Condy. 1965. *Ostrich*, **36** (3): 121-122. After studying the food habits of these large storks, the author decided to use a narcotic (alpha-chloralose) to capture the birds for parasitological investigations. Because the storks feed on larvae of Rhinoceros Beetles (*Oryctes boas*) around compost piles, gelatin capsules containing the drug were firmly inserted into larvae, and the baited larvae were then scattered at stork feeding grounds. Optimum dosage was found to be 12-15 mg./lb. A total of 45 storks was caught by this method and most recovered from the drug. Interestingly enough, three Pied Crows (*Corvus albus*), much smaller birds, consumed the bait, became narcotized, but also recovered even though they received a heavier dosage than the storks (on a per-gram basis). After being examined for external parasites, all the birds were banded and released.

The alpha-chloralose technique might prove to be effective in the capture of other large species (for example, Cattle Egrets), provided one could devise a means for getting the bird to consume the bait and, as well, not an overdose.—David W. Johnston.

7. Bird Ringing in the Netherlands (Ringverslag van het Vogeltrekstation). A. C. Perdeck and B. J. Speek. 1965. *Limosa*, **38** (3-4): 142-199. This is a report, largely in Dutch, of some 90,000 birds banded in the Netherlands in 1963. Most of the paper consists of tables of birds banded and recovered. Of special interest are some foreign recoveries of birds banded as nestlings in the Netherlands. Marsh Harriers (*Circus aeruginosus*) were recovered as far south as Gibraltar and Dakar. Mistle Thrushes (*Turdus viscivorus*) were found in France and Spain.—David W. Johnston.

MIGRATION

(See also 2, 3, 5, 12, 39, 43)

8. Non-visual Orientation of Nocturnal Unrest in Robins. (Nichtvisuelles Orientierungsvermögen bei nächtlich zugunruhigen Rotkelchen!). Friedrich Wilhelm Merkel, Hans Georg Fromme, and Wolfgang Wiltschko. 1965. *Die Vogelwarte*, **22**(3/4): 168-173. (English Summary.) Merkel and Fromme reported in 1958 and 1961 that Robins (*Erithacus rubecula*) were able to orient their nocturnal activity in a closed room without sight of the sky. Subsequently Perdeck (*Ardea*, **51**: 91-104, 1963) failed to reproduce their results in a similar experiment, and he quoted a criticism by Matthews of Fromme's statistics. In this paper Fromme's 1961 results are re-analysed using a more sophisticated test, and again show a significant orientation.—I. C. T. Nisbet.

9. Magnetism and Orientation of Migratory Restlessness in Robins. (Magnetismus und Richtungsfinden zugunruhiger Rotkelchen (*Erithacus rubecula*).) F. W. Merkel and W. Wiltschko. 1965. *Die Vogelwarte*, **23**(1): 71-76. (English Summary.) Robins kept in Kramer-cages in a closed room without sight of the sky "oriented" towards the southwest in autumn (see review no. **8**). Their orientation disappeared when they were placed inside a steel chamber (in which the earth's megnetic field was reduced from its normal value of 0.41 oersteds to 0.14 oersteds), but orientation reappeared after they had been kept in the steel chamber for three or more days. When an artificial magnetic field (0.30 or 0.41 oersteds) was applied to the chamber the birds changed their orientation. In each of two experiments, in which the artificial magnetic field was applied in different directions, the birds oriented to an angle about 135° to the left of the field; this is the same angle as that between the earth's undisturbed field and the birds' undisturbed orientation.

In view of the controversy over the earlier experiments in this series (see review no. **8**), these startling results need to be tested by independent experimenters. However, even if they are independently confirmed, it is hard to see how this "magnetic orientation" can be relevant to homing or migration of birds under natural conditions, for the orientation is extremely weak. In one typical test, the difference between 3908 movements to the northwest and 2908 movements to the southeast is the evidence for significant northwest orientation.—I. C. T. Nisbet.

10. Bird Migration on the North African coast. (Vogelzug an der nordafricanische Küste von Tunisien bis Rotes Meer.) Jacob Kiepenheuer and K. Edward Linsenmair. 1965. *Die Vogelwarte*, **23**(1): 80-94. The authors watched the moon during four full-moon periods in 1963 at various places in North Africa. In March in Tunisia they saw birds departing northeast over the Mediterranean on each of four nights. In April in Tripolitania they saw a northeast movement on only one night; on two nights birds appeared to be following the coast westwards, and on two nights few birds were seen. In Eastern Egypt in early September they saw large numbers of birds flying south or S.S.W. across the desert and the Nile valley. In Western Egypt in late September they saw birds flying south and southwest both early in the night (presumably local departures) and late in the night (presumably birds that had flown from Europe), but not in the middle of the night.

Except in the periods of negative observations mentioned above, the average density of migration was about 160 birds per hour per mile, in all the areas visited except in eastern Egypt, where density was two or three times larger. Thus, at face value, the observations support both Moreau's picture (*Ibis*, **103a**: 373-427, 580-623, 1961) of broad front migration across the Mediterranean Sea and Sahara Desert, and Bourne's picture (*Bird-Banding*, **34**: 162-165, 1963) of 'dog-leg' migration around the east Mediterranean. However, the calculated densities of migration were in fact smaller than expected on either hypothesis.—I. C. T. Nisbet.

11. Notes from Falsterbo Bird Station Summer and Fall 1963. Report No. 30. (Notiser från Falsterbo fågelstation sommaren och hösten 1963.) Gunnar Roos. 1965. *Vår Fågelvärld*, **24**: 314-334. (English summary.) Activities extended from 1 June to 3 November and consisted predominantly of banding and special studies. Migratory restlessness was observed several times during the summer, especially on 30 June involving nine species. The most notable among these were 30 Ring Doves (*Columba palumbus*) which actually left, flying out over the sea southwards. The appearance of the Rough-legged Buzzard (*Buteo lagopus*) in the largest numbers hitherto recorded was the highlight of the hawk migration. The Short-toed Eagle (*Circaëtus gallicus*), on record for the third consecutive year, may now be expected to follow the example of the Spotted Eagles (*Aquila clanga*) and gradually establish itself as a regular migrant. Large movements of finches occurred with easterly as well as westerly winds; in the first instance the influence of leading lines was negligible as the birds flew high and on a broad front, but in the last case the birds flew low following these lines. A period of stormy weather in early October was apparently the cause of an unusual influx of six species of Atlantic sea birds.—Louise de K. Lawrence.

12. Return of Palaearctic Birds to Place of Banding in Zambia. A. J. Tree. 1965. *Ostrich*, **36**(3): 144-145. Four species are mentioned—Wood Sandpiper, Green Sandpiper, Great Reed Warbler, and Sedge Warbler. About one year elapsed from the time these birds were first caught on their wintering grounds and then recaptured, either at the same location or nearby.—David W. Johnston.

13. The Fall Migration of Cranes as an Indicator of Time for Winter Sowing in Esthonia. (Osenii prolet zhuravlei kak indikator srokov poseva ozimykh v Estonii.) V. A. Zhelnin. 1965. *Ornitologiya*, **7**: 341-345. In various quarters serious consideration has been given to the use of animal, and even plant, movements as instruments for predicting meteorological phenomena, i. e. a phase of "biometeorology," "a new field in biophysics" (cf. I. D. Brudin, *Priroda*, No. 4: 23-30, 1961). This article carries the matter beyond theoretical prospects apparently to definite results. The migratory activity of the Common Crane (*Grus grus*) in southern Esthonia shows two phases: the first, in which they hover about and scarcely drift southward, starts variously from mid-August to early September and occurs in mild weather; the second phase, in which they fly directly southward, commences about 23 days after the start of the first, and almost invariably accompanies night frosts. Thirteen years of observations show that winter rye sown five days after the start of the first phase of crane flight will have time to reach the most favorable growth stage (7-8 leaves) and no more than that, before the fall freeze sets in, thus resulting in a higher yield.—Leon Kelso.

14. Detection by Radar of Autumn Migration in Eastern Scotland. John Wilcock. 1965. *Ibis*, **107**(3): 316-325. One season's observation of migration in eastern Scotland is compared with the author's observations in eastern England, described in a paper (*Ibis*, **106**: 101-109, 1964) which has not been reviewed in *Bird-Banding*. The density of migration was significantly smaller in Scotland, and the westward arrivals which were frequent and heavy in England were rarely observed in Scotland, except during southerly winds which apparently caused the birds to drift northward. Some large arrivals reported by ground observers were not detected by radar, probably because the birds flew too low. Some large arrivals detected by radar were not reported by ground observers, probably because the birds flew inland at a high altitude before descending. The few cases when both radar and ground observers reported large numbers of birds were associated with rain, fog or cross-winds. In England the discrepancy between radar and visual observations could be attributed mainly to the effect of wind, but in Scotland other weather factors appeared to be more important. The author concludes in both papers that radar observations need to be supplemented by visual data if a complete record of migration is to be obtained.—I. C. T. Nisbet.

15. The Homing of Pigeons after Bisection of the Semicircular Canals. (Über das Heimfindervermögen von Brieftauben mit durchtrennten Bogengängen.) Hans G. Wallraff. 1965. *Zeits. für vergl. Physiol.*, **50**: 313-330. (English Summary.) The horizontal semicircular canals of nine homing pigeons were bisected, so that they were no longer able to perform head-stabilizing movements (nystagmus). In subsequent homing tests these pigeons performed as well as normal control birds. Wallraff concludes that homing ability in pigeons cannot be based on inertial navigation. His experiment does not, however, eliminate the possibility that inertial mechanisms may play a secondary role in the maintenance of orientation.—I. C. T. Nisbet.

16. Radar Studies of Waterfowl Migration. Frank C. Bellrose. 1965. *Trans. 29th N. A. Wildl. and Natural Resources Conf.*: 128-142. Waterfowl were observed by means of four radar stations in the mid-West during November 1962. Large numbers of ducks arrived in the Mississippi and Illinois river valleys from the northwest: after alighting in the valleys for a day they changed their direction of flight to south or SSW. There was no evidence, however, that they oriented their flight by flying parallel to these rivers or to the Missouri River. At Havana, Illinois migration continued throughout the night, with a peak around 8.30 P.M. Bellrose considered that all the birds passing this station had just taken off from the nearby valleys, but he did not explain fully his reasons for rejecting other interpretations.—I. C. T. Nisbet.

17. The Influence of Weather on Nocturnal Orientation as Observed by Radar. (Einflüsse des Wetters auf die nächtliche Orientierung wandernder Vögel nach Beobachtungen am Radarschirm.) Ernst Sutter. 1961. *Sonderbucherei der Funkortung, Diskussionstagung in Essen vom* 4-8 *Januari* 1960: 1-13. This obscure paper, read at a conference in Germany in 1960, contains some important data which (to the reviewer's knowledge) have not been published elsewhere. The report has not been abstracted nor circulated widely, and has been overlooked by subsequent workers on the subject.

Observations were made using the Zurich airport radar during the autumns of 1957, 1958, and 1959. Sutter described observations during eight typical nights under varying weather conditions, and drew the following conclusions:

1. With light winds and clear or partly cloudy skies, the mean direction of flight was between S.W. and W.S.W.

2. Cross-winds drifted the birds sideways.

3. With strong head-winds, birds abandoned their orientation and flew down-wind.

4. Under overcast skies, directions of flight became random.

While Sutter admitted that his evidence was not all fully conclusive, some of these conclusions seem to be contradicted by the evidence that he gave. Of the three examples which he described as "random orientation," only one is convincing—case no. 7, in which birds flying below a layer of cloud oriented at random and concentrated over the city lights, while at the same time birds above the cloud layer were oriented in the normal direction. The other two cases were both associated with moderate westerly winds, which, by drifting the birds eastwards, should have given rise to a net eastward movement (*track*) relative to the ground if the birds were in fact oriented on random *headings*. Figure 4, for example (which appears to refer to case 5 described in the text, although it is labelled otherwise), shows a concentration of tracks between S.E. and S.S.W., which suggests drift from more or less *southwesterly* headings by the westerly wind.

In the same way, Sutter's two examples of "down-wind orientation" seem equally well interpreted, on the evidence given, as drift from the normal heading. Case 3, in particular, with a W.S.W./S.W. wind and an eastward track, seems to be clear evidence *against* a down-wind heading.

It is difficult to assess the exact extent of wind-drift from the data given. The cases discussed above are consistent with the hypothesis of lateral drift from a uniform S.W. heading, but they do not prove it. The clearest example is case 8, in which the birds' tracks averaged about 175° with an 8-16 knot N. W. wind, and returned to "normal" when the wind shifted to north at 8 knots. The first of these figures suggests lateral drift from a S.W. heading, but the second indicates compensation for drift. Sutter's data are thus consistent both with observations in England that lateral drift through large angles does occur, and with recent observations in North America that birds can and do compensate for drift caused by light winds. Hopefully, he will publish his data in a complete form.—I. C. T. Nisbet.

POPULATION DYNAMICS

(See also 32, 56)

18. On the Structure of the Bird Fauna on Some Coastal Meadows in Western Finland. Martti Soikkeli. 1965. *Ornis Fenn.*, **42**(4): 101-111. In 1960 on 33 hectares within the rural district of Pori, 59 nests of 84-103 pairs of 10 species were found, a density of 252-309 pairs per square kilometer. The majority of the birds fed outside the meadow, most of them along the shore. The breeding birds have increased since the 1920s, especially the Dunlin (*Calidris alpina*), Ruff (*Philomachus pugnax*), and Lapwings (*Vanellus vanellus*). The other most abundant species are the Redshank (*Totanus tringa*) and Skylark (*Alauda arvensis*). It is indeed a treat to read of these fine birds increasing in numbers.—Margaret M. Nice.

19. A Breeding Bird Census and Nesting Success in Central America. Alexander F. Skutch. 1966. *Ibis*, **108**(1): 1-16. A high nesting population was found on Dr. Skutch's home farm at 2,300 feet elevation in Costa Rica. Of 208 nests of 37 species during four seasons 85 (41%) succeeded in fledging at least one bird. In 1943-44 there were 28.2 breeding birds per acre on the farm.

Of 756 nests located in the same general area 277 (37%) were successful. Of 434 of these nests discovered before the last egg was laid 150 (35%) were successful; from the 451 eggs laid in these nests 269, (30%) fledglings were raised.

Table 6 compares the author's nesting censuses in six Central American regions. Nesting success in three at altitudes from 85-2,300 feet ranged from 21 to 43%; in three from altitudes of 5,000 to 10,000 feet it ranged from 44 to 55%. The lower success at the lower altitudes probably reflects in part the larger proportion of forest (with its abundance of predators) included in the regions searched. Four of these censuses compare well with censuses in northern temperate zones: the nesting success in 24 studies on 7,788 open nests of altricial birds ranged from 38 to 77%, averaging 49% (Nice, *Auk*, **74**: 305-321, 1957).

Dr. Skutch concludes that in Central America: "By far the most important cause of nest losses is predation." He finds snakes the most important enemies and considers the greater success of nestings at higher altitudes partly due to their scarcity in such regions. Tropical areas altered by man show higher nest success than the undisturbed forests. "If they escape the perils of infancy, tropical birds must, on the whole, enjoy fairly long lives; for otherwise their populations could not be maintained." A notable study.—Margaret M. Nice.

20. Bird Fauna of the Finnish Forests in Relation to Forest Succession. Antti Haapanen. 1965. *Ann. Zool. Fenn.*, **2**(3): 153-196. This is one of the most thorough papers to appear in recent years on bird populations in relation to plant succession. Detailed coverage is provided for such major topics as annual variations in bird densities in climax forests, effects of forest characteristics on the avifauna, and indirect effects of human activities on the avifauna. Preliminary to actual field work, and later coincident with it, the author clearly defines forest successional stages and classifies the avifauna as to feeding and nesting niches.

Although many conclusions are reached from this study, only a few can be summarized here. ". . . . the changes in the total bird densities are primarily affected by the density of the birds feeding in trees and bushes, which, especially on moist forest land, increases considerably with the increasing age of the stand." Further, changes in natural forest succession by silviculture and their effects on the avifauna are discussed. On moist forest sites, avian species suffering most include hole-nesters and species of open brush. On the other hand, some species appear to benefit from silvicultural practices—species depending on spruce and species of thin and open stands. "Taken as a whole, silviculture clearly decreases the densities of bird species nesting in coniferous stands," and "spruce invasion and the decrease of hardwoods in our forests have caused considerable changes in the forest bird fauna during recent decades."

Those interested in bird populations and plant succession and changes in bird populations with time will find much valuable information in this paper.—David W. Johnston.

21. Nationwide Population Estimates of Blackbirds and Starlings. Brooke Meanley and John S. Webb. 1965. *Atlantic Nat.*, **20**(4): 189-191. As a result of a nationwide cooperative survey by the U. S. Fish and Wildlife Service, this brief report reveals the presence of 0.5 billion blackbirds and starlings in the continental United States. Most of the winter roosts are in the lower Mississippi Valley and the eastern U. S. Probably the largest single roost is in the Dismal Swamp where some 25 million birds spend the winter.

The authors question the suggestion that current numbers represent a recent population explosion. Perhaps it does for starlings, but huge blackbird aggregations were known in the early 1800's.—David W. Johnston.

22. Dispersal of Young Tree Sparrows (Passer m. montanus L.) J. Pinowski. 1965. *Bulletin de l'Academie Polonaise des Sciences, Cl. II,* **13**(9): 509-514. From 1960 to 1964, 4379 nestling Tree Sparrows near Warsaw were ringed with numbered aluminum rings as well as with a colored ring different for each natal colony. In 1962 the author studied the dispersal of the young birds from four colonies about four kilometers apart. "During the first two or three months after leaving the nest as many as 81% of the birds stayed within a range of about 1.5 km. from their birthplace, i.e. within their parent-flock territory: 18 per cent lived in the territories of neighboring flocks and only 1 per cent wander to join more distant flocks.—Margaret M. Nice.

23. The Occurrence in the Stockholm Region of the Thrush Nightingale. (En inventering av näktergalens (*Luscinia luscinia*) förekomst i Stockholmstrakten.) Anders Bjärvall. 1965. *Vår Fågelvärld,* **24:** 294-300. (English summary.) In the years 1960-1963 Sweden's Ornithological Society undertook a census of the species in order to ascertain its distribution and population density in this northerly outpost of its range. Sixty-six localities reported from one to six birds, mostly singing males. Nine nestings were recorded during the three-year period. The species was first mentioned by Linnaeus in the 18th century. Although originating from the southeast, the species apparently entered Sweden from Denmark. Toward the middle of the 19th century, it vanished, reappearing 50 years later, and from then on increased to its present population level and expansion.—Louise de K. Lawrence.

NIDIFICATION AND REPRODUCTION

(See also 18, 19, 32, 34)

24. Breeding Biology of the Pigeon Guillemot, Cepphus columba. R. H. Drent. 1965. *Ardea,* **53**(3-4): 99-160. (Summary in Dutch.) This long and valuable paper is based on 632 hours of observation in 1959 and 1960 on a population of 45 pairs of this species, five of which had been color-ringed in 1957 to 1960. This was on Mandarte Island in British Columbia (see review in *Bird-Banding,* **36:** 205, 1965.)

"Retention of the mate, nest-site, and perch-site (beach territory) over the years was the rule." "Each pair had a circumscribed area on the beach, roughly a circle one meter in diameter, from which intruders were driven off . . . . This is where copulation occurs, and where the birds spend their unoccupied hours while at the colony." Various behavior patterns are described in detail and illustrated with sketches and photographs.

Two eggs are laid with an interval of three days. Incubation is shared between the parents and lasts 30 days. Shifts during the day lasted from 40 minutes to 17 hours; at night for about seven hours. "The nestling period averaged 35 days (range 29-39) and was not terminated by a starvation period." The chicks left the area at once but the parents continued to visit the colony for some 13 days.

The final section on thermoregulation, illustrated with five graphs and a table, is based on experimental results contributed by Jukka Koskimiés. It is summarized thus: "The dramatic improvement in thermoregulation during the first 24 hours coincided with a sharp increase in basal metabolism from the 50% level to values corresponding to, or slightly in excess of, those typical for adult homoiotherms."—Margaret M. Nice.

25. A Brief Contribution to the Breeding Biology of the Ringed Plover. (Kort bidrag till kännedomen om större sandpiparens (*Charadrius hiaticula*) häckningsbiologi.) Sten Regnell. 1965. *Vår Fågelvärld,* **24:** 310-313. (English summary.) This is a concise paper containing some valuable data. The clutch contained four eggs laid at intervals of approximately 36 hours. Measurements of the eggs are given. The incubation period was about 24 days (22 days 19 hrs., 25 days 2 hrs). The interval between the hatching of the 3d and 4th eggs was at least 2 days 9 hrs. Thirty-three to 37 days elapsed before the young could fly, or 8 to 12 days longer than the period given in the literature.—Louise de K. Lawrence.

26. 'Clicking' in the Egg-Young of Nidifugous Birds. Peter M. Driver. 1965. *Nature*, **206**(4981): 315. The so-called "tapping" sounds heard during the hatching process of precocial chicks have often been attributed to contact between the chick's bill and the shell. Dr. Driver cut a small hole through the shell and outer shell membrane into the air-space at the blunt end of the egg of an Eider (*Somateria mollissima*) and ascertained that the clicking was "produced simultaneously with respiratory movement," evidently "a side-effect of the newly functioning respiratory system." The same explanation of "tapping" has been found in 12 other species of the Anseriformes, in two of the Galliformes, two of the Gruiformes, and five of the Charadriiformes.—Margaret M. Nice.

27. Great Bustards in Portugal. M. D. England. 1966. *British Birds*, **59**(1): 22-27. This well-planned expedition to study nesting *Otis tarda* succeeded both in seeing flocks of these birds up to 59 individuals and in making fine photographs of the incubating female and newly hatched chicks, including one magnificent photograph in color. Females lay only two to three eggs in a set and apparently do not re-lay after losing the first clutch. The "adults are much shot for sport and food; the mechanization of farming is spreading, albeit not very fast; and toxic pesticides are being used as enthusiastically as a new toy."—Margaret M. Nice.

28. Breeding Biology of the Manx Shearwater *Puffinus puffinus*. M. P. Harris. 1966. *Ibis*, **108**(1): 17-33. This study was carried out on the island of Skokholm during 1963 and 1964; it involved regular inspection of more than 100 nesting burrows. The single egg weighs about 15% of the female's weight. Usually the male took the first incubation spell; this lasted from 3-11 days. Incubation spells by each parent varied from 1-26 days, averaging 6. The incubation period for 43 eggs averaged 51 days; the average fledging period was 70 days. Chicks gain rapidly until they weigh twice as much as their parents, at which time they are deserted. They live on their fat for an average of 8.5 days before taking off to the sea and immediately leaving the area. Nesting success was high—95% of the chicks that hatched. Nine pairs were given an extra chick but in no case were two raised.—Margaret M. Nice.

29. Preliminary Studies on the Breeding Behaviour of the Marsh Tit. Ven Chung-ming *et al.* 1965. *Acta Zool. Sinica*, **17**(4): 364-372. (In Chinese with English summary.) Research on breeding activities of *Parus palustris* was carried out in the two years 1963-1964. The usual subjects are covered in this paper—copulation, nest construction, egg sizes, clutch sizes, incubation, fledging, and food taken by the young. Emphasis is given to beneficial effects of the Marsh Tit, especially since the birds consume large numbers of serious insect-pests (pine caterpillars and larch miners).—David W. Johnston.

30. Studies of Less Familiar Birds: 138. Great Snipe. P. O. Swanberg. 1965. *British Birds*, **38** (12): 504-508. A hundred years ago *Gallinago media* nested commonly in southern and central Sweden, but now is restricted to northern Scandinavia to northern Siberia. The males congregate on communal display grounds where they display for a few hours around midnight in northern Sweden. Seven excellent photographs illustrate phases of the display in which the bird gives a twittering call that runs into a drumming sound. The birds frequently jump five to eight feet into the air; sometimes two jump together, facing each other, but they show no hostility to each other.—Margaret M. Nice.

LIFE HISTORY

(See also 30, 56)

31. The Life History of the Superb Blue Wren *Malurus cyaneus*. Ian Rowley. 1965. *Emu*, **64**(4): 251-297. Within that great complex of birds, the order Passeriformes, are several "problem" groups that taxonomists have shifted from family to subfamily or vice versa. Part of the difficulty in such cases reflects inadequate life history data which might be used for comparative purposes.

Among these "problem" groups are the so-called Australian warblers, an assemblage of 80-odd species inhabiting the Australasian region. Oliver L. Austin, Jr. in his monumental *Birds of the World* (1961) describes these birds as the "most aberrant of the sylviids," giving them, as some others have done, subfamily rank (Malurinae) in the family Sylviidae. No doubt partly due to space limitations, Austin's analysis of these Australian birds is confined to two short paragraphs, but it is equally true that heretofore the available information on this group has been in the form of bits and scraps of miscellaneous notes in the literature. Now, Rowley has made a valuable contribution by studying intensively a marked population of one species, *Malurus cyaneus*.

His summary (p. 251) reads: "A completely colour-banded population of these small, sociable, multibrooded passerines of the subfamily Malurinae was studied for more than four years . . . . Their plumage, behaviour, song, breeding biology and population dynamics are discussed with particular reference to the persistence of the young-of-the-year within the family group throughout the winter, the consequent problems of dispersion and, ultimately, the frequent occurrence of more than one mature male in the breeding group. It is suggested that this apparent polyandry enables the species to be reproductively more successful within the limits of a variable climate."—David W. Johnston.

32. On the Ecology of the Roller (*Coracias garrulus semenovi*) in Turkmen. (K ekologii sizovoronki v Turkmenii). G. S. Belskaya. 1964. *Izvestiya Akad. Nauk Turkmensk.* SSR. Ser. Biol. No. 6: 42-49. A study under direction of G. P. Dementiev. The ratio of males to females in Turkmen (out of 106 specimens) was 1.4: 1. The nesting period lasted 56-68 days. The nesting burrow was excavated in the ground mainly by the male, mostly during the morning hours, requiring three to five days. During this time and until the young left the nest the male also brought food to the female. The clutches, of 4-8 eggs, comprised 43-70% of the weight of the gravid female. Larger clutches (probably from older birds) were deposited earlier. During the 18-day incubation period egg-weight declined 13.5%. Young hatched from 70.3% of the eggs; the rest were destroyed by foxes. The mortality of young was 47.6%. On the average 2.5 young survived to departure from each nest. Their time spent in the nest varied from 27 to 39 days. Nest sanitation was periodic and a definite microclimate was maintained therein. Each of the young was fed 18-23 items per day, mainly locusts. The radius of the feeding territory was 0.8-lkm. On an area of 6km² whereon 9 pairs nested, an estimated 670,000 noxious insects were destroyed by the Roller during the nesting period. Molt commenced in late May and continued until fall departure.—Leon Kelso.

BEHAVIOR

(See also 53)

33. Preening Behavior in the Goldeneye. (Iakttagelser rörande knipans (*Bucephala clangula*) putsningsbeteende.) Leif Nilsson. 1965. *Vår Fågelvärld,* **24:** 301-309. (English summary.) The Goldeneye preens regularly throughout the day. Preening and related comfort activities increase in intensity towards evening before sleeping position is assumed. Certain differences occur between spontaneous preening and displacement preening. The first is performed after spontaneous bathing as well as after shaking and stretching. Four forms of bathing are described and six forms of preening, each involving separate areas of the body. The preening movements have varying threshold values. While the drive is at low intensity, those with low threshold values appear, but as motivation increases those of higher threshold values emerge.

Displacement preening in combination with other displacement movements occurs after disturbances and flight, after aggressive behavior, and after copulation. The most common activities after disturbances and aggressive behavior are wing-flapping and wing-bend preening. After copulation the male resorts to a ritualized movement, the so-called "post-copulatory steaming" wherein he swims away from the female. The female has no corresponding ritual, but instead engages in more intensive comfort activities than the male, which include-wing-flapping, bathing (dipping), and general preening.—Louise de K. Lawrence.

34. Spacing and Chasing in Breeding Ducks. Frank McKinney. 1965. *Wildfowl Trust 16th Annual Report*: 92-106. A detailed survey of social and anti-social behavior in early nesting stages of 14 species of ducks, well documented with a page and a half of references. Dr. McKinney points out many problems that need further study. He concludes: "The primary function of chasing and the spacing resulting from it is thought to be the dispersion of nests as an anti-predator mechanism."—Margaret M. Nice.

35. On the Influence of Hunger and Other Factors on the Storing Activity of Ravens. (Ueber den Einfluss des Hungers und anderen Faktoren auf die Versteck-Aktivität des Kolkraben (*Corvus corax*). Eberhard Gwinner. 1965. *Die Vogelwarte*, **23**(1): 1-4. (English summary.) Another interesting report on Herr Gwinner's captive Ravens (see *Bird-Banding*, **36**: 275, 1965.) The longer the birds had been without food before the experiment, the more of it they hid. Fat and fatty meat were favorite objects to store. "Since even very young Ravens show this preference, it is probably innate." The survival value of such behavior is evident.—Margaret M. Nice.

ECOLOGY

(See 20, 32, 41, 46, 50)

PARASITES AND DISEASES

36. Mallophaga from Birds Associated with the Water Environment in Poland. J. Zlotorzycka. 1961. *Acta Zool. Cracoviensia*, **6**(8): 273-343. This extensive paper examines the Mallophaga taken from birds representing 13 families. Among the points discussed are hosts with the degree of infestation by Mallophaga, descriptions and drawings of Mallophaga from each bird family, and finally "a trial of correlation of affinities in *Mallophaga* with those in their hosts." Anyone interested in the application of host-parasite relations to phylogeny will benefit by reading this latter section. For example, the conclusion is reached that the affinity, if any, between owls and *Accipitres* is remote.—David W. Johnston.

37. Mallophaga Parasitizing within the Bird Families Columbidae and Phasianidae in Poland. J. Zlotorzycka. 1962. *Acta Zool. Cracoviensia*, **7**(5): 63-86. The paper is essentially a description of the mallophagan species parasitizing five species of Columbidae and six species of Phasianidae, as well as a few zoo-raised birds.—David W. Johnston.

CONSERVATION

(See 20)

MORPHOLOGY AND ANATOMY

38. Variation in Avian Brain Weights with Special Reference to Age. Richard R. Graber and Jean W. Graber. 1965. *Condor*, **67**(4): 300-318. Three years ago the Grabers published an impressive paper on "Weight characteristics of birds killed in nocturnal migration" (*Wilson Bull.*, **74**(1): 74-88.) Now they have written a scholarly report based on highly skilled examination of 234 victims of a television tower kill in September, 1962, on 108 collected House Sparrows (*Passer domesticus*), and on a thorough acquaintance with the literature on the subject both here and abroad for the last 77 years. Findings are shown in 9 detailed figures and 1 table.

The authors conclude: "In all passerines for which data are available, brain weight reaches a peak before skull ossification is completed, then declines as the bird matures." (This pattern, of growth and decline, characterizes altricial birds and mammals but does not appear to exist in precocial birds.) "The decline in brain weight associated with maturation involves mainly a loss of water from the

brain." "Immature migrants of several species . . . were still apparently adding to the water, protein and lipid makeup of their brains, although they were hundreds of miles south of their breeding grounds."

The authors discuss many problems suggested by their results, among them, the possibility that "apparent interspecific variation in brain size may actually be age variation," and that brain weight may prove useful in ageing populations. A notable investigation.—Margaret M. Nice.

39. Comparison of Migratory Adaptations in the Rustic and Black-faced Buntings. Nagahisa Kuroda. 1964. *Misc. Rep. Yamashina Inst. Ornith. and Zool.*, **4**(2): 76-90. (In Japanese with English summary.) The Rustic Bunting (*Emberiza rustica*) is migratory between Japan and Siberia, whereas the Black-faced Bunting (*E. spodocephala*) " moves only along the Japanese coast." Birds of both species were killed on the same date at a lighthouse. Rustic Buntings "showed the following higher migratory adaptations than the Black-faced:" greater body weight and more fat (fat-free body weight about the same), wing-length and wing-span larger, more pointed wing-tips, wing-area larger, longer keel on sternum, certain body organs slightly larger (liver, heart, lung), and head (skull) smaller. Each of these adaptive features is discussed in some detail.—David W. Johnston.

40. Data on Body Weight, Fat Weight, and Gonad Size of Lighthouse Struck and other Birds. Nagahisa Kuroda. 1964. *Misc. Rep. Yamashina Inst. Ornith. and Zool.*, **4**(2): 71-75. (In Japanese with English summary.) Thirty-four species are included in this analysis, the birds ranging in size from 890 g (*Buteo buteo*) to 8.8 g (*Phylloscopus occipitalis*). Fat weight is given, unfortunately, as "amount of scratched body fat," thus not total fat in the birds. This means that Kuroda's figures on fat: body wt. (%) are not strictly comparable to similar proportions obtained by American investigators who have extracted total body fat.—David W. Johnston.

PHYSIOLOGY

(See also 15, 44, 55)

41. Bioenergetics of the Dickcissel, Spiza americana. John L. Zimmerman. 1965. *Physiol. Zool.*, **38**(4): 370-389. One aspect of physiological ecology is to provide explanations for the distribution of species in concrete ecological terms, especially on a quantitative basis. A few studies of this kind are available for birds, and the present one is an outstanding example because it ". . . is concerned with the energy requirements and temperature tolerances of the dickcissel in relation to its distribution and to the events in its annual cycle."

In the Canal Zone and in Illinois energy requirements of the Dickcissel were measured under outdoor conditions and in the laboratory. Using different photoperiods the author obtained data on body weights, lethal temperatures, gross energy, excretory energy, metabolized energy, and maximum productive energy. The latter is defined as "maximum potential energy corrected for existence requirements." Seasonally, maximum productive energy reaches a peak depending upon the latitude (values are given for Canal Zone, Yucatan, Texas, Illinois, Canada). At the higher latitudes in Illinois and Canada, for example, long days of summer are advantageous because it is here that maximum productive energy is obtained.

Perhaps the most significant points of this paper appear in the author's summary (pp 387-8). "The dickcissel gains in productive energy by spring migration from the tropics to the north-temperate breeding grounds and by returning to the tropics in autumn. Furthermore, the spring migration is so timed that nesting activity begins at about the time this increase can be first obtained. Fall migration removes the dickcissel from its nesting latitude just prior to environmental conditions that result in an unfavorable energy balance. Northward distribution in the summer is probably limited both by the magnitude and duration of productive energy available for reproduction. Although productive energy decreases to the south of its summer distribution, the present southern limit of the dickcissel's breeding range appears to be dependent on other factors."—David W. Johnston.

42. Survival of the Scaly-feathered Finch Sporopipes squamifrons Without Drinking Water. T. J. Cade. 1965. *Ostrich*, **36**(3): 131-132. Of special interest to comparative physiologists are those animals capable of tolerating extreme environmental conditions. Many desert birds fall into this category, and Dr. Cade provides here another example of a species that can "lead an existence independent of surface water for long periods of time." Five of these weavers were deprived of drinking water for 62 days, and given only air-dried seeds for food; yet their body weights were maintained at nearly normal levels. Later, the birds did consume water when it was provided, but the important thing is their ability to withstand long intervals of water deprivation, hence, an adaptation for desert existence.—David W. Johnston.

43. The Caloric Content of Migrating Birds. Eugene P. Odum, Shirley G. Marshall, and Timothy G. Marples. 1965. *Ecology*, **46**(6): 901-904. Odum and his students present here another result from their continuing investigations on migratory bird physiology. Long-range premigrants in autumn had a higher caloric content (mean of 8.1 kcal/g ash-free dry weight) than did spring arrivals in northern Florida (mean of 7.0) and lean non-migrants (6.3). Because the caloric value of the ash-free nonfat component for all three groups was about the same, the authors conclude that the caloric component of the nonfat portion of a migrating bird is not affected by fat deposition and utilization. This result agrees with an earlier discovery suggesting that the nonfat portion of a bird is essentially homeostatic during migration (Odum, Rogers, and Hicks, *Science*, **143**: 1037-1039, 1964).—David W. Johnston.

PLUMAGES AND MOLTS

44. The Bird's Feather. (Pero ptitsy.) A. A. Voitkevich. 1962. USSR Academy of Sciences Publishing House, Moscow. 288 pp., 104 figures, 21 tables. 1 rouble, 43 kopecks (about $3.50 U. S.). Books on the principal distinguishing character of the class Aves, the feather, are so rare that some notice of this book, though tardy, may be appropriate, although it is now difficult to obtain. Like ornithologists of the past who were derived from or associated with the profession of medicine (Laboratory of Neuroendocrinology, Institute of Medical Radiology, Academy of Medical Sciences, USSR), its author is a formidably profound and productive researcher, as shown by the 33-page bibliography of 834 titles, 269 of which are Russian (63 by the author), and 565 in other tongues. There is an introduction and seven chapters: 1. Structure, coloration, development and molt of feathers; 2. Experimental analyses of some conditions of anlage, growth, and development of feathers; 3. The role of the thyroid glands in the developmentof plumages and molt; 4. The participation of gonads in the formation of plumage characters; 5. The hypophysis (anterior lobe) and feather formation; 6. Significance of the nervous system in the development and molt of feathers; 7. Conclusions (and bibliography). Whereas the book is vast in concept and execution and the items of information under each heading are numerous, the book by no means exhausts all possibilities in feather physiology (e.g. biochemical analyses, radiology, parasites, preening, and anting are not treated). As the subtitle (Morphology, development, molt and neurohormonal regulation) indicates, the book is heavily weighed toward work of the author and others on the role of glands in the phenomena treated. Nevertheless the thoroughness and originality of the research presented and the vastness of the bibliography makes this book an astounding and admirable production despite the sparsity of articles on feathers that one may cursorily see.—Leon Kelso.

ZOOGEOGRAPHY

(See also 3, 12, 23, 41, 46, 56)

45. Laughing Gull Observed in Gotenburg Harbor. (Amerikansk skrattmås (*Larus atricilla*) observerad i Göteborgs fishkamn.) Tomas Albrektsson

and Roland Berndtsson. 1965. *Vår Fågelvärld,* **24:** 289-293. (English summary.) A Laughing Gull in first winter plumage was observed in the company of a large flock of Black-headed Gulls (*Larus ridibundus*) 18-20 January 1964 by a number of ornithologists and several photographs were taken. The weather conditions earlier in the winter indicate the possibility of its having been storm-driven across the Atlantic and North Seas. This represents a first record for Sweden.—Louise de K. Lawrence.

SYSTEMATICS

46. A Systematic Study of the Terrestrial Birds of the Tres Marias Islands, Mexico. P. R. Grant. 1965. *Postilla,* **90:** 1-106. The author's objectives in undertaking this study were to effect a taxonomic revision of the Tres Marias birds and to compare them with their mainland counterparts. The latter comparisons are certainly desirable because, generally speaking, continental islands, such as the Tres Marias, have avifaunas less well known than those on oceanic islands.

Nearly one-half of the paper is devoted to species accounts wherein "the differences between mainland and island forms of each of the species is presented, together with an appraisal of the taxonomic status of the island forms." Previously, 25 endemic subspecies have been recognized among the terrestrial birds on the islands. Dr. Grant has upheld 19 of these and described another insular subspecies.

Assessing the characteristics of the island birds vs. mainland counterparts the author notes that the insular forms tend to have longer tarsi, longer bills, more drab and less distinctive plumage, and perhaps other differences. These characteristics of the insular birds are believed to be related to the relative paucity of species on the islands. In the absence of closely-related species on the islands, foraging activities have been extended with a concomitant reduction in bill size and tarsal length. No concrete data on foraging activities, however, substantiate these claims. Perhaps a reduced body-size among the Tres Marias Birds is also related to an impoverished avifauna.

This investigation, as thorough as it is, could have been strengthened, I believe, by studies of population density, habitat preferences, and inter-specific competition among the mainland species that have counterparts on the islands——David W. Johnston.

FOOD

(See also 29, 35)

47. Study on the Make Up of the Diet of Owls from the Niski Beskid Mts. Antoni Kulczycki. 1964. *Acta Zool. Cracoviensia,* **9** (9): 531-559. (In Polish with English and Russian summaries.) Pellets were obtained from 18 nests of *Tyto alba,* 5 *Strix aluco,* and 2 *Athene noctua.* Mammals (26 species and 3598 specimens) comprised 97.8 per cent of the total prey items. Birds, chiefly *Passer domesticus,* represented only 1.5 per cent of the total. Those of us who have laboriously extracted skulls and other bones from owl pellets have been interested in the number of pellets containing only one species of prey. This author noted that some 36 per cent of the pellets contained one prey item. He concludes (p. 556) ". . . that, having found a place abounding in food, the predator returns to it again and again, until the number of preys has decreased below the average value of the night catch. Then follows the phase of the so-called "haphazard search" of the hunting-ground, which will be given up only after another hunt rich in food has been found. The multispecific pellets come from this period." A factor in this argument appears to have been overlooked, namely size of the prey. Regardless of the number of *Rattus* present in a hunting area, it is extremely unlikely that one pellet could contain more than one *Rattus* remains.—David W. Johnston.

48. The Diet of the Eagle-owl Bubo bubo (L.) in the Pieniny Mts. Z. Bochenski. 1960. *Acta Zool. Cracoviensia,* **5**(8): 311332. Three breeding sites were located; animal remains and regurgitated pellets were collected over a period

of time at each site. In per cent of the total number of individual prey items taken, the following figures are presented: mammals (chiefly *Microtus*), 62.5; birds, 11.5; amphibians, 19.0; fish, 2.0; arthropods, 5.0. In a large table, these results are compared with the Eagle-owl's food in various regions of Europe. Although more than 50 per cent of this owl's food is generally rodents, significant numbers of corvids and partridges are eaten.—David W. Johnston.

49. An Apparatus for Continuous Recording of Food Intake in Caged Birds. Martin L. Morton. 1965. *Ecology*, **46**(6): 888-890. Those who have tried to measure accurately the food consumed by caged birds without disturbing them will appreciate this article and the apparatus described therein. This apparatus uses strain gages and it can detect a weight change of 0.05 g in 15 g both remotely and automatically. Dr. Morton suggests that the set-up could be used in measuring ". . . energy intake, . . . changes in body weight, and voiding of excretory materials."—David W. Johnston.

50. Feeding Ecology of the Red-backed Sandpiper (*Calidris alpina*) in Arctic Alaska. Richard T. Holmes. 1966. *Ecology*, **47**(1): 32-45. Thanks to the efforts of Dr. Holmes, the Red-backed Sandpiper or Dunlin is one of the most thoroughly studied shore birds in the world. In addition to the present article Dr. Holmes has published on the redback's breeding biology and annual cycle (*Condor*, **68**(1): 3-46, 1966).

Emphasis in the present work is on the redback's food on the tundra. Both tipulids and chironomids are favorite foods, insects which abound on the tundra during the sandpiper's nesting period.

Holmes' findings tend to qualify Lack's contention that breeding seasons in birds are timed to peak food supplies. As Holmes states (p. 45): ". . . the critical timing relation is that between hatching of young and a food supply which presents only a fraction of the overall supply used by the breeding population."—David W. Johnston.

SONG

51. The Role of Auditory Feedback in the Control or Vocalization in the White-crowned Sparrow. Masakazu Konishi. 1965. *Zeits. f. Tierpsych.*, **22**(7): 770-783. (German summary.) This species (*Zonotrichia leucophrys nuttalli*) exhibits regional dialects in its songs. "Songs are learned during a short critical period by young birds which do not themselves sing at this time." In experiments at the University of California at Berkeley birds, deafened before they have sung, develop atypical songs, but "once birds have sung, the pattern of song can be maintained relatively unaltered after deafening." Females, which in this species do not sing naturally, do so if injected with testosterone implants. The article is illustrated with seven spectrograms.—Margaret M. Nice.

52. Imitation and Variation of Shepherd Whistles by Crested Larks. (Imitation und Variation von Schäferpfiffen durch Haubenlerchen (*Galerida c. cristata* [L.].) Erwin Tretzel. 1965. *Zeit. f. Tierpsych.*, **22**(7): 784-809. (English summary.) "This is the first time that the original and infrequent imitation of human whistles by birds in their natural habitat could be tape recorded and objectively compared." The author found four different Crested Larks that had imitated the four different whistle commands given by a shepherd to his dog. "The dog recognized and correctly obeyed the tape-recorded imitations. Each Crested Lark usually did not fit these imitations into its own song but instead arranged them together in a series or separated them only by short sound groups. . . . Lark A presented its shepherd imitations mostly in a pleasing arrangement with definite metrical construction that revealed an astonishing sense of feeling of the singer for musical form and proportion." "We can, thereby, for the first time, give an example of a *predisposition for specific vocal mimicry*." The author presents 17 spectrograms of the originals and the imitations.—Margaret M. Nice.

BOOKS AND MONOGRAPHS

53. On Animal and Human Behavior. The Development of Theories on Behavior. Collected Writings. Vol. II. (Ueber tierisches und menschliches Verhalten. Aus dem Werdegang der Verhaltenslehre. Gesammelte Abhandlungen. Band II.) Konrad Lorenz. 1965. Munich. R. Piper & Co. Verlag. 398pp. D.M. 14.80. The first volume of this paperback edition was reviewed in *Bird-Banding,* **37**: 68, 1966. The second volume reprints six more studies, originally published from 1941 to 1963. The first—Vergleichende Bewegungsstudien an Anatinen—appeared in English as "Comparative Studies on the Behaviour of the Anatinae," 1951 to 1953 in *Avicultural Magazine.* The other papers are theoretical discussions for the most part. The volume concludes with notes, bibliography, and indices of authors and subjects covering both of the paperbacks.—Margaret M. Nice.

54. Studies in the Life History of the Scarlet Tanager, Piranga olivacea. Kenneth W. Prescott. 1965. *New Jersey State Museum Investigations,* No. 2: 1-159. Trenton, N. J. $2.50. Dr. Prescott, director of the New Jersey State Museum at Trenton, studied this species in 1947, 1948, and 1949 at the Edwin S. George Reserve of the University of Michigan; he writes of the generous assistance of Dr. George M. Sutton in the field work.

On arrival in spring the male Scarlet Tanager sings much in his territory from the tops of trees, but sings little after the appearance of a mate. Interestingly enough he courts from low perches by displaying "his scarlet rectangular back patch to the female. His scarlet back, neck and head are outlined strikingly by the black tail and wings." In this display the male holds his wings slightly away from his body with the tips well below the tail.

His mate chooses the nest site and builds the nest in from four to seven days; she incubates the eggs for 13 days and is fed on the nest by the male. Both parents feed the young which leave the nest when nine to ten days old. Female tanagers were frequently heard singing, sometimes as loudly as the males.

The female Cowbird (*Molothrus ater*) is recognized by the tanager pair as an enemy, yet the Cowbird was a common and successful parasite. In 17 nests, 33 tanager eggs and 15 Cowbird eggs were laid; 8 tanagers and 8 Cowbirds were fledged. There was no evidence of second broods in the tanagers.

Two charming water-color illustrations by Dr. Sutton show the plumage of fledglings. Charts and tables give details of food and feeding schedules; growth of young, banding dates and localities, etc. A good study, handsomely presented. —Margaret M. Nice.

55. Avian Physiology. Paul D. Sturkie. 1965. Comstock Publishing Associates, Ithaca, New York. Second edition. *xxvii* + 766 pp. $15.00. When this book appeared in its first edition in 1954, a widely held criticism was its restriction largely to domesticated birds (see Farner, *Bird-Banding,* **35:** 173, 1954; Dawson, *Auk,* **71:** 477, 1954). In the second edition, some emphasis is still given to "chickens and other domestic avian species" but the coverage is now considerably greater, for much research from "wild birds" is now included. I don't feel, however, that the author of statements on the fly-leaf was justified in attributing this second edition to the "additional research by the author and his associates." Rather, it is obvious from scanning chapter contents and references at the end of each chapter that Dr. Sturkie and his contributing authors recognized the need for expanding coverage beyond domesticated species and have, therefore, made a rather thorough search for physiological papers on nondomesticated species.

This second edition is an improvement over the first edition in many ways. Most of the chapters have been at least partially rewritten, updated, and more references cited. The total number of pages has nearly doubled—from 423 to 766. A new chapter by Jasper ten Cate, has been added on the nervous system and, especially, its physiological aspects. Other chapters written by Dr. Sturkie in the first edition now have a new author. This includes chapters on regulation

of body temperatures and energy metabolism (G. C. Whittow), carbohydrate metobolism (R. L. Hazelwood), special senses (M. R. Kare), and thyroid glands (R. K. Ringer). The chapter on body temperatures, to take one example, is a great improvement over the first edition, especially because it now includes many data from nondomesticated species. It is somewhat marred, however, by the frequent use of "rectal temperature" in birds and by the occasional pre-occupation to be precise with breeds of chickens (Rhode Island Reds, white Leghorns) but some imprecision with other birds ("the pigeon," "owls," "the wild duck").

In spite of the general updating of material in the second edition, there are still notable gaps. Certainly the recent literature contains enough information on muscle physiology, fat metabolism, and molt so that these topics could have received considerable attention. Other gaps include, for example, data from wild birds on thyroid cycles, photo periodism, reproductive cycles, heart rates, and air sacs. Inclusion of these topics would, I believe, have provided an even better balance to *Avian Physiology*.—David W. Johnston.

56. Bird Studies at Old Cape May. Witmer Stone. 1965. Unabridged republication, Dover Publications, New York. Vols. I and II, 941 pp., illustrated, paperback. $5.50 per set. "One of the great modern classics of birdwatching at a price every nature lover can afford!" Such are the brief words of praise announcing this latest of the Dover reprints. And, apt they are, for ornithologists both young and old will recall Witmer Stone as one of the greatest field ornithologists of his day and his vivid account of Cape May birdlife embracing the years between 1920 and 1937. Stone's original publication, in a setting of coastal New Jersey's woods, fields, marshes, and shores, contained page after page of natural history observations for more than 350 species reported at the Cape or nearby.

The present reprint contains a new Introduction by Roger Tory Peterson who, in turn, reminisces about his own experiences while observing birds at the Cape and focuses attention upon species whose numbers have dwindled there and elsewhere. Also James A. G. Rehn has written a perfectly fascinating biography of Witmer Stone recounting his many accomplishments. (This chapter is reprinted from *Proc. Delaware Valley Ornith. Club.* **31,** 1938-41.) Happily, Dover requested of Ernest A. Choate a "List of Additional Species Recorded in Cape May County, 1937-1963." Herein are 51 species recorded in Cape May County since Stone's publication in 1937. All in all, this material adds much to Stone's personal picture of the rich natural history of the region.—David W. Johnston.

57. The Bird Watcher's Quiz Book, Henry Hill Collins, Jr. 1965. Dover Publications, Inc., New York, N. Y. 116 pp. $1.00. This is another Dover reprint, of a work first published by Harper and Brothers in 1961. Its title reveals the contents, namely a series of matching, multiple-choice, and fill-in questions about birds. Questions are in sections each designed for the amateur, the advanced, the expert, and the specialist. In all, 1741 questions are included in 74 quizzes. Subjects include identification of birds, habitats, crossword puzzles, philately, etymology, and many others. This little book was conceived as something to pass the time, as in a hotel room or on a train, and by "the conviction that quizzes were an easy way to learn solid facts about birds . . . ." (from the author's introductory remarks). Fortunately, at the back of the book are answers to the questions; otherwise I wouldn't have known that a "dropping" is a flock of sheldrakes. No doubt, "the book is best suited to the needs of the leader of an adult bird watcher's group, a camp counselor, or a teacher of older children."—David W. Johnston.